



**Human Landing System  
NextSTEP-2 Appendix P, Sustaining  
Lunar Development (SLD)  
*Solicitation Draft Release***

**Virtual Industry Forum  
April 4, 2022**



# HLS Draft Solicitation Industry Forum Agenda



Topic	Speaker
Welcome, Introductions, and Forum Ground Rules	<b>Joe Vermette</b> Office of Communications (NASA MSFC)
Appendix P BAA Overview	<b>Lakiesha Hawkins</b> Deputy Manager, Human Landing System Program (NASA MSFC) —and— <b>Stacey Hadavi</b> Contracting Officer, Human Landing System Program (NASA MSFC)
Closing	<b>Joe Vermette</b> Office of Communications (NASA MSFC)

# Industry Ground Rules

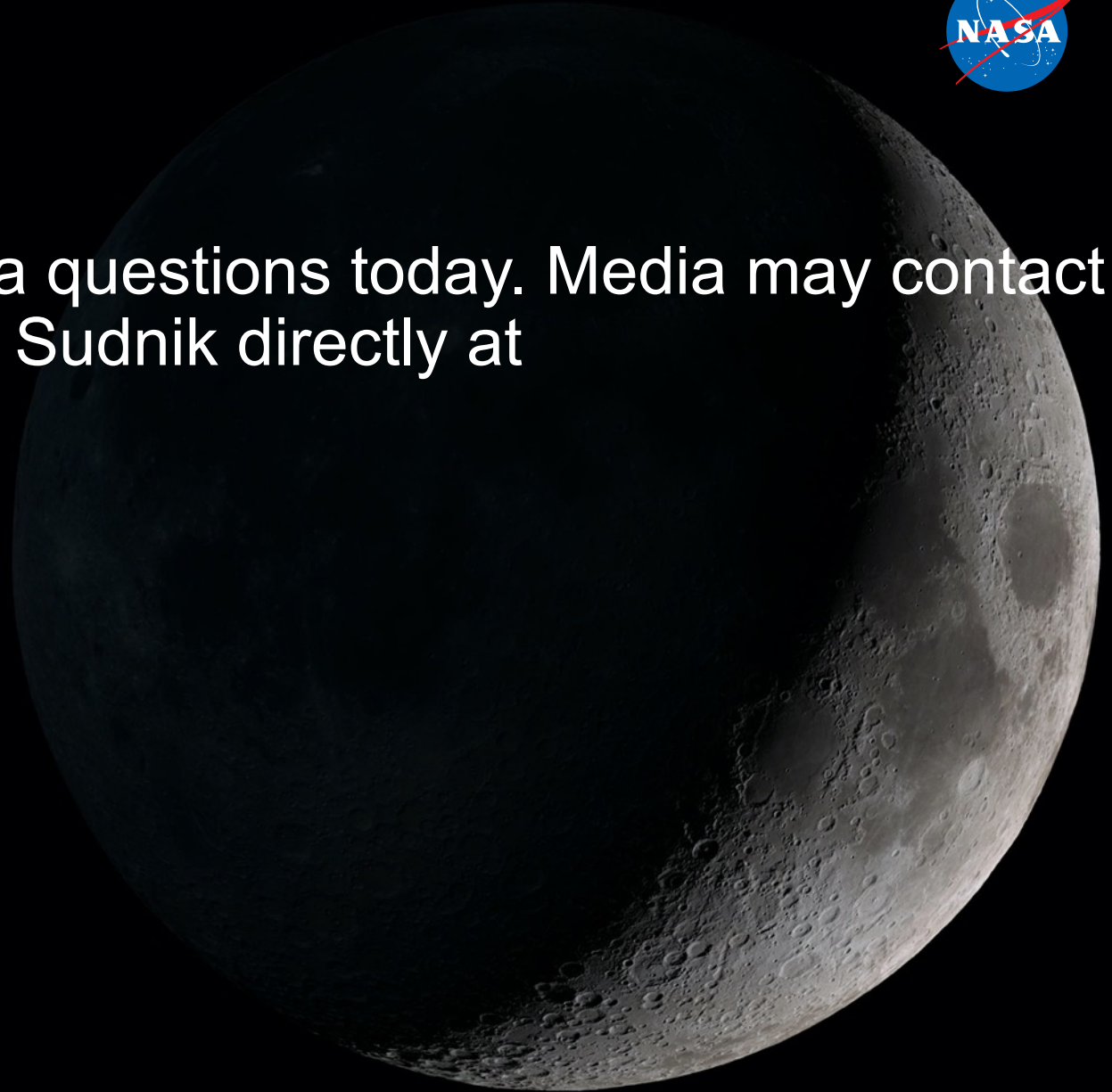


- We will answer draft solicitation clarifying questions via the WebEx chat feature
- Formal comments and questions should be submitted electronically to [hq-hls-baa@mail.nasa.gov](mailto:hq-hls-baa@mail.nasa.gov) & [stacey.e.hadavi@nasa.gov](mailto:stacey.e.hadavi@nasa.gov) attn: Stacey Hadavi, no later than 6:00 p.m. Central Time on April 4, 2022
- Today's slides and a Q&A log will be posted to the NextSTEP website
- NASA will not provide evaluations, opinions, or recommendations regarding any suggested approaches or concepts
- NASA remarks and explanations during today's forum do not qualify the terms of any future solicitations (i.e., the solicitation governs)

# Media Questions



- We will not be taking media questions today. Media may contact Public Affairs Officer Janet Sudnik directly at [janet.m.sudnik@nasa.gov](mailto:janet.m.sudnik@nasa.gov)







## Appendix P, SLD Draft Solicitation Overview



# HLS Sustaining Lunar Development (SLD) Supports Artemis Sustained Lunar Presence

First lunar surface expedition through Gateway; external robotic system added to Gateway; Lunar Terrain Vehicle delivered to the surface

Sustainable operations with crew landing services; Gateway enhancements with refueling capability, additional communications, and viewing capabilities

Pressurized rover delivered for greater exploration range on the surface; Gateway enables longer missions

Surface habitat delivered, allowing up to four crew on the surface for longer periods of time leveraging extracted resources. Mars mission simulations continue with orbital and surface assets

Lunar Terrain Vehicle (LTV)

Crew Landing Services

Pressurized Rover

Fission Surface Power

ISRU Pilot Plant

Surface Habitat

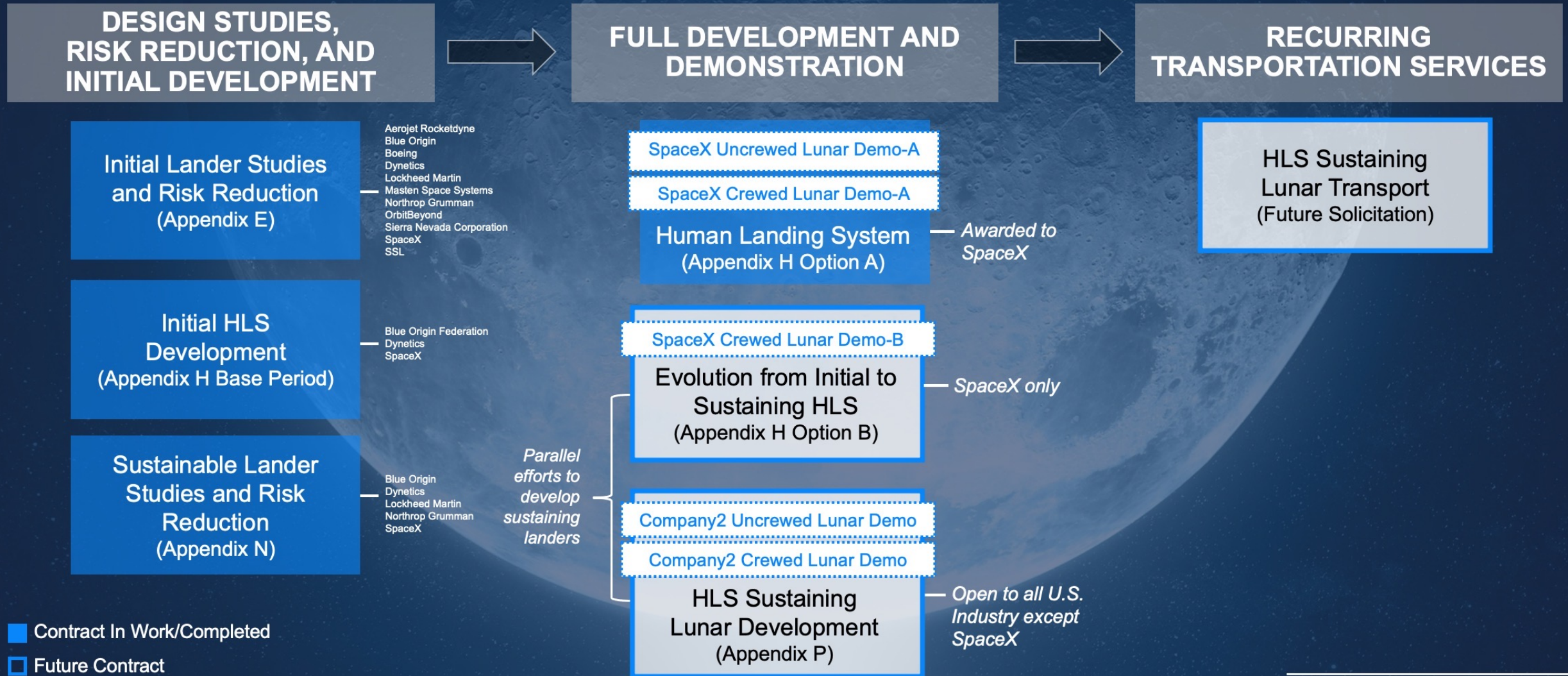
## ***SUSTAINABLE LUNAR ORBIT STAGING CAPABILITY AND SURFACE EXPLORATION***

MULTIPLE SCIENCE AND CARGO PAYLOADS | U.S. GOVERNMENT, INDUSTRY, AND INTERNATIONAL PARTNERSHIP OPPORTUNITIES | TECHNOLOGY AND OPERATIONS DEMONSTRATIONS FOR MARS

(Notional representation of surface capabilities)



# Human Landing System (HLS) Procurement Path



# HLS Sustaining Strategy: Continues the Best of NASA & Industry



HLS continues to leverage the speed, operational models, and privately-funded development efforts while applying NASA expertise to ensure safety and mission success.

- Milestones and Deliverables tied to hardware-based activity
- Functional Requirements remain lean and Standards adjudication approach consistent with previous solicitation
- Insight approach maintains NASA's responsibility for certifying the system(s)
- Collaboration and GTA's continue industry access to NASA expertise and resources



# Sustaining Lunar Dev (SLD) Scope



- Full and open competition after exclusion of one source, Space Exploration Technologies Corp. (SpaceX)
- Firm-Fixed Price, performance milestone-based payments
- 5-year period of performance
- Scope :
  - Design, Development, Test and Evaluation (DDT&E) of Sustainable HLS Lander
  - HLS docking with Gateway, transfer of crew to HLS
  - Lunar surface landing near the South Pole
  - Lunar surface extra-vehicular activity (EVA)
  - Return of crew and materials from the surface and transfer from HLS
  - Leverage crewed lander dev for landers capable of human-class cargo delivery
- Successful contractor baseline design eligible to compete for crew and cargo transport service via Sustaining Lunar Transport (SLT) contract.

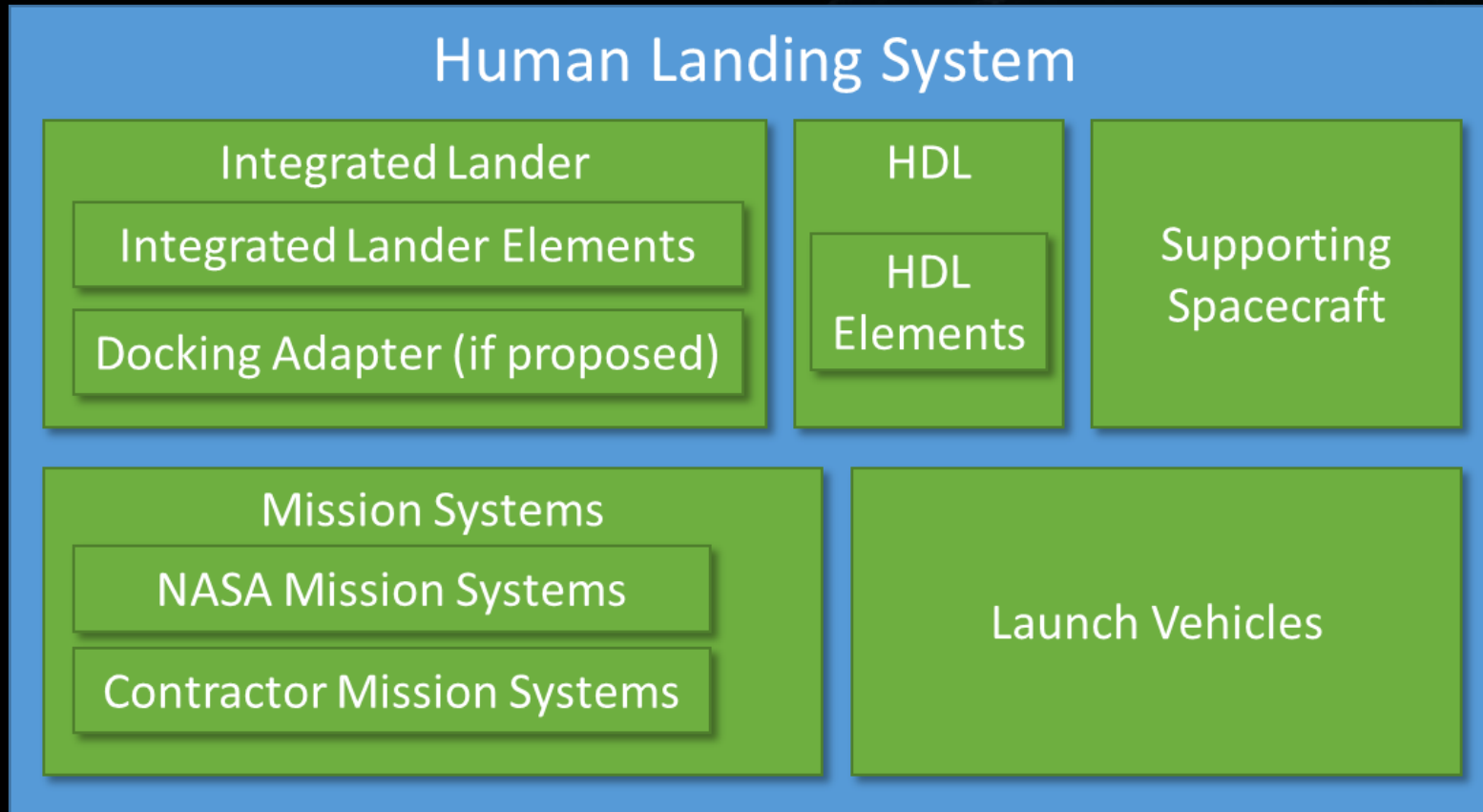
# Solicitation Funding and Pricing



- Acquisition strategy assumes one award
- Contract award will be dependent upon both funding availability and evaluation results
- NASA reserves the right to select for award multiple, one, or none
- Pricing:
  - NASA expects to achieve adequate price competition
  - NASA will not require certified cost and pricing data
  - NASA will not require Offerors to be compliant with Cost Accounting Standards



# Constituents of HLS Scope



Human-class Delivery Lander (HDL): Large payload transportation capability via a cargo variant of the Integrated Lander

# Roles and Responsibilities:

## Leverage commercial products and processes



### Government Responsibility

- Approve contract requirement changes, deliverable acceptance
- Approve verification closures
- Certification of Flight Readiness (CoFR) for the crewed demonstration mission
- Critical Artemis mission Go/No Go calls for the Integrated Lander and HDL
- Software Independent Verification and Validation (IV&V)

### Contractor Responsibility

Design, development, manufacture, test, system verification, system demonstration, and system operation of HLS

### Shared Responsibility

- Validate compliance of contractor proposed milestone reviews with applicable acceptance criteria
- HLS Safety and Engineering Review Panel (HSERP)
- Operate in accordance with primary and shared responsibility for critical mission operational phases



# Forum Purpose



Provide an overview of NASA's HLS NextSTEP-2 Appendix P Draft Solicitation, released March 31, 2022

<https://sam.gov/opp/69caee776b304322a256acd0b5deaf57/view>

<https://www.nasa.gov/nextstep/humanlander4>

The SAM.GOV logo is located at the top left of the page. It features the text 'SAM.GOV' in a bold, sans-serif font, with a small American flag icon to the left.

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The NASA logo is displayed on the left side of the page, below the SAM.GOV logo.

Contract Opportunity

[General Information](#) [Classification](#) [Description](#) [Attachments/Links](#) [Contact Information](#) [History](#) [Award Notices](#)

A 'Follow' button with a plus icon and the word 'Follow' is located in the top right corner of the main content area.

## NextSTEP-2 Appendix P, Sustaining Lunar Development (SLD) [Draft]

ACTIVE

Contract Opportunity

Notice ID

NNM19ZCQ001K\_Appendix-P-SLD

Related Notice

Department/Ind. Agency

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Sub-tier

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Office

NASA MARSHALL SPACE FLIGHT CENTER

### General Information

Contract Opportunity Type: Presolicitation (Original)

All Dates/Times are: (UTC-05:00) CENTRAL STANDARD TIME, CHICAGO, USA

## NextSTEP Appendix P: Human Landing System Sustaining Lunar Development

March 23, 2022 – Updated Sustaining HLS Plans: [Announcement](#)

March 31, 2022 – [Draft Solicitation issued](#) | [Announcement](#)

**March 31, 2022** – NASA released a draft of the second Next Space Technologies for Exploration Partnerships (NextSTEP-2) Broad Agency Announcement (BAA) Appendix P solicitation for Human Landing System (HLS) Sustaining Lunar Development. This solicitation will seek proposals from U.S. industry for the development and demonstration of a landing system that meets NASA sustaining HLS requirements for missions beyond Artemis III, such as the ability to dock with the lunar orbiting Gateway, support four crew members, and transport more science and technology equipment to the lunar surface. Industry feedback to this draft solicitation is due May 2, 2022, at 5 p.m. Central Time (CT) per instructions posted with the solicitation at [sam.gov](https://sam.gov).

### Virtual Industry Forum:

NASA will host an HLS Virtual Industry Forum on **Monday, April 4, 2022**, at 1 p.m. CT, to provide an overview of the Appendix P solicitation, timeline, and goals. Instructions for virtual participation in the Industry Forum are as follows.

### Connection details:

- WebEx Link: <https://nasaenterprise.webex.com/nasaenterprise/j.php?MTID=md1bb11a8fe38d923d0a1327fcd9c293c>
- Meeting Number: 2764 076 4017
- WebEx Passcode: 6n6PwwHa2b\* (66679942 from phones)

Pre-registration is not required to participate; however, participants are encouraged to provide their name, affiliation, and email address to [heather.hall@nasa.gov](mailto:heather.hall@nasa.gov) no later than 10 a.m. CT, April 4. After the Industry Forum, an industry participant list will be posted on this webpage to facilitate partnering among potential offerors. To opt out of this list, please notify NASA by email at [heather.hall@nasa.gov](mailto:heather.hall@nasa.gov) by COB April 5, 2022.

The Industry Forum will include an opportunity to request a one-on-one meeting with NASA for potential prime offerors and major partners later during the week of April 4 to clarify questions. Please submit your request for a one-on-one meeting and your industry day questions by 6 p.m. CT.



Artist's illustration of an Artemis astronaut stepping from a Moon lander onto the lunar surface.

# Draft Solicitation Introduction



- Solicitation Objectives

- To enable rapid development and demonstration of a Sustainable Human Landing System (HLS) from a second provider, delivering humans to the lunar surface in a subsequent Artemis mission, with the goal of 2027. To leverage the crewed lander development activities to certify the design of landers capable of human-class cargo delivery.

- Timeline

- |                                    |  |
|------------------------------------|--|
| • 3/31/22                          | Draft Solicitation issued as a Request for Information (RFI) |
| • 4/04/22                          | Industry Day   |
| • 4/06/22                          | Begin Industry one-on-ones                                   |
| • Summer 2022                      | Final Solicitation Issued                                    |
| • 60 Days after Final Solicitation | Proposal Due   |
| • 1/31/2023                        | Anticipated Contract Award                                   |



# Appendix P Draft Solicitation Documents

(as issued 3-31-22)



## Appendix P BAA Main Body

### NextSTEP-2 Omnibus BAA Amendment 21

#### Attachment A - Reference Library

(due to size limitations Attachment A is divided into multiple files: A01 through A11. Attachment A02 is divided into 2 files due to some documents being ITAR/EAR/CUI)

#### Attachment B - NASA Points of Contact

#### Attachment C - EFSS Box Proposal Submission Instructions

#### Attachment D - Corporate Contribution Worksheet

#### Attachment E - Model Contract

#### Attachment F - HLS Requirements (compatibility IRD-HDL)

#### Attachment G - Statement of Work (SOW)

#### Attachment H - Data Procurement Document (List of Data Requirement Deliverables (DRDs))

#### Attachment I - Government Furnished Equipment/Property (GFE/GFP) List

#### Attachment J - Design and Performance Metrics Tables

#### Attachment K - Optional GFE/GFFP Agreement Template

#### Attachment L - Reserved

#### Attachment M - Reserved

#### Attachment N - Reserved

#### Attachment O - Milestone Acceptance Criteria and Payment Schedule

#### Attachment P - Pricing Template

#### Attachment Q - Government Task Agreement Template

#### Attachment A01 - HLS Sustaining Phase ConOps

#### Attachment A02 - Relevant Standards and Documents

#### Attachment A03 - Interoperability Standards

#### Attachment A04 - Whitepapers

#### Attachment A05 - OriHLS-VV-002 Verification Guidebook

#### Attachment A06 - HLS FY21 IPEP v1.0, HLS-MOA-001

#### Attachment A07 - JSC 35191 Artemis Flight Operations Standards

#### Attachment A08 - HLS US Radiation Facilities Availability

#### Attachment A09 - RPT Capabilities Summary

#### Attachment A10 - Center Capabilities

#### Attachment A11 - ACD-52105-Artemis Campaign Development (ACD) Medical Operations Requirements Document (MORD)

# CLIN Structure



CLIN	Title
<b>Base CLINs</b>	
<b>001</b>	HLS Integrated Lander Design, Development, Test and Evaluation (DDT&E) through PDR
<b>002</b>	IDIQ – Special Studies and Tasks
<b>Option CLINs</b>	
<b>Integrated Lander Continued DDT&amp;E</b>	
<b>003</b>	Integrated Lander Through CDR
<b>004</b>	Integrated Lander Through DCR
<b>005</b>	Integrated Lander Through Crewed Demonstration Sortie Mission
<b>Human-class Delivery Lander (HDL) DDT&amp;E</b>	
<b>006*</b>	HDL DDT&E through PDR
<b>007</b>	HDL DDT&E Through CDR
<b>008</b>	HDL DDT&E Through DCR

\* NASA may opt to exercise CLIN 006 at any time between initial award (i.e., at ATP) and up to two years after ATP. For its proposal, Offeror should assume work on this CLIN starts at ATP.

# Proposal Content



- Title Page
- Executive Summary
- Volume I: Technical
- Volume II: Price
- Volume III: Management
- Volume IV: Proposal Attachments





# Use of Government Resources

## Government Task Agreements (GTAs) and Collaboration



- NASA has unique human spaceflight engineering and operations expertise, capabilities, and resources that it is making available to Offerors in accordance with contract section H clause, *Use of Government Resources*
- Two types of Government Resources
  - Government Task Agreements (GTAs)
    - Provides the ability for the Offeror to utilize on-site NASA resources
    - Request using Attachment Q, *GTA Template*, form submitted with Proposal
  - Collaboration
    - Offeror shall provide the details of its planned approach to utilization of the up to 60 NASA equivalent personnel (EPs) that NASA has offered to all offerors, at no charge, in their Collaboration Plan
- NASA Center capabilities are included in Attachments A-9 and A-10
- Offerors should work with NASA Center POC's identified in Attachment B, *Center POC Listing*

# Use of Government Resources

## Government Furnished Property (GFP)



- Mandatory GFP required for successful execution of the crewed demonstration mission is listed on Tab 1 of Attachment I, *SLD GFP List*
- Enumerated Optional GFP that offerors may request in support of the DDT&E and demonstration mission execution is listed on Tab 2
- Tab 3 should be filled in with Non-Enumerated Optional GFP that the Offeror is requesting
- For Optional GFP, Contract section H clause, *Contractor Use of Government-Furnished Equipment, Property, or Information*, requires use of Attachment K, *Optional Government-Furnished Property Agreements (OGFPAs)*, to request use of optional Government-Furnished property
- To inquire about the availability of optional GFP, Attachment B contains a list of the Center points-of-contact for each NASA Center.
- **Forms will be formalized at Final Solicitation +9 calendar days (BAA section 2.2). Industry is encouraged to begin communication as early as possible.**

# Attachment P, Pricing Template



- Tab A: Summary; Not required to fill-in
- Tab B: Enter prices for the individual CLINs and the values for the Optional GFP and GTAs
  - Optional GFP and GTA values are for evaluation purposes only (Total Evaluated Price)
- Tab C: Input individual GTA and GFP values
  - Data and values entered should match GTA and OGFP forms
- Tab D: Input Indefinite Delivery Indefinite Quantity (IDIQ) labor categories and fully-burdened rates
- Pricing Template shall be submitted with the Price Volume (Volume II)



# SLD Evaluation Criteria



- **3 evaluation factors in descending order of importance:**
  - Technical Approach, Crew Safety and Mission Assurance
  - Total Evaluated Price
  - Management Approach
- **Factor 1 is more important than Factor 2 which is more important than Factor 3**
- **Factor 1 and 3, when combined, are significantly more important than Factor 2**

Evaluation Factor	Area of Focus
<b>Factor 1: Technical Approach, Crew Safety, and Mission Assurance</b>	Technical Design Concept
	Development, Schedule, and Risk
	Verification, Validation, and Certification
	Insight
	Launch and Mission Operations
	Sustainability
	Approach to Early System Demonstrations
<b>Factor 2: Total Evaluated Price</b>	No focus areas
<b>Factor 3: Management Approach</b>	Organization and Management
	Schedule Management Process
	Risk Management Process
	Business Approach
	Past Performance
	Small Business Subcontracting Plan
	Data Rights

# Options



## Evaluation for Exercise of Options

- NASA will determine whether to award Options
- NASA's intent is to transition between the Base period and subsequent Option periods without any break in contractor performance
- The decision to award Options (formally authorize work initiation) rests solely with the Government, and no guarantee is made that an option will be awarded even though the contract will cite a value for the effort
- While NASA reserves the right to change its HLS acquisition strategy at any time, NASA is currently planning to award the Base CLIN for a single contractor, pending availability of funds; and either at initial award or later, exercise Options for that contractor
- Proposals shall include a firm-fixed-price (FFP) for the Option periods



# SLD Design Reference Missions (DRMs)



## DRMs associated with the Sustaining HLS Integrated Lander

DRM Reference	Description	Duration	Crew	EVAs
DRM-H-001 (DRM-001)	Polar Sortie Mission to South Pole	6.25 days on surface	2	4 planned, 1 unplanned
DRM-H-001b (DRM-001b)*	Non-Polar Sortie Variant	6.25 days on surface	2	4 planned, 1 unplanned
DRM-H-002 (DRM-002)	Polar Surface Excursion Mission	33 days on surface (lander)/5 days on surface with crew	4	2 transfers (1 in/1 out) 1 EVA unplanned

Reference: HLS-CONOP-006, *Sustained Phase Human Landing System(HLS) Concept of Operations*

\*Note: DRM-001b is a goal and requirements specific to DRM-001b should be treated as goal requirements

## DRMs associated with the HDL Delivery System

DRM Reference	Description	Destination	Non-Binding Cargo Example
DRM-C-001	Integrated Cargo Delivery Mission	South Pole	Surface Habitat
DRM-C-002	Offloaded Cargo Delivery Mission	South Pole	Pressurized Rover

Reference: HLS-CONOP-007, *Human-class Delivery Lander Concept of Operations*

# Closing



Comments and questions shall be submitted electronically to [hq-hls-baa@mail.nasa.gov](mailto:hq-hls-baa@mail.nasa.gov) no later than 6:00 p.m. Central Time on April 4, 2021.

## Resources

- NextSTEP Appendix E: <https://www.nasa.gov/nextstep/humanlander>
- NextSTEP Appendix H: <https://www.nasa.gov/nextstep/humanlander2>
- NextSTEP Appendix N: <https://www.nasa.gov/nextstep/humanlander3>
- NextSTEP Appendix P: <https://www.nasa.gov/nextstep/humanlander4>
- More about HLS: <https://www.nasa.gov/content/humans-on-the-moon-0>



